

REMARKS

I. RESTRICTION REQUIREMENT

The Examiner restricted the application under 35 U.S.C. § 121 between the following groups of claims:

Group I - Claims 1-12, characterized by the Examiner as directed to an electronic device; and

Group II - Claims 13-16, characterized by the Examiner as directed to a method of electronic device.

Applicants affirm the election of Group I, claims 1-12, by Applicants' representative on August 10, 2005.

II. THE PRESENT AMENDMENT

By the present Amendment, Applicants have amended claims 2, 5, and 10-12 to correct informalities and not for reasons related to patentability. Claims 1-16 are pending, and claims 13-16 have been withdrawn from consideration as directed to non-elected invention.

III. THE CLAIM REJECTIONS

In the Office Action, the Examiner rejected claims 1-4, 6, 8, and 9 under 35 U.S.C. § 102(e) as anticipated by Okubora et al. (U.S. Patent No. 6,528,732); rejected claim 5 under 35 U.S.C. § 103(a) as obvious over Okubora et al. in view of Shibasaki et al. (U.S. Patent No. 4,296,424); rejected claim 7 under 35 U.S.C. § 103(a) as obvious over Okubora et al. in view of Yasuda et al. (U.S. Patent Pub. No. 2002/0100610); rejected claims 10 and 11 under 35 U.S.C. § 103(a) as obvious over Okubora et al. in view of Japp et al. (U.S. Patent No. 6,722,031); and rejected claim 12 under 35 U.S.C.

§ 103(a) as obvious over Okubora et al. in view of Japp et al. and Hur (U.S. Patent No. 6,646,334). Applicants respectfully traverse these rejections.

In order to properly anticipate Applicants' claimed invention under 35 U.S.C. § 102, each and every element of the claim in issue must be found, "either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Moreover, "[t]he identical invention must be shown in as complete detail as is contained in the . . . claim. Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)." See M.P.E.P. § 2131, 8th ed., Rev. of May 2004.

The rejection of claims 1-4, 6, 8, and 9 under 35 U.S.C. § 102(e) as anticipated by Okubora et al. is improper, because Okubora et al. fails to teach each and every element of these claims. For example, independent claim 1 recites, inter alia, "a wiring substrate having an insulating substrate with a porous structure including continuous pores and wiring conductors selectively formed in the porous structure." The Examiner considered Okubora et al.'s double-side printed circuit board 41 as corresponding to Applicants' claimed insulating substrate. Office Action, page 3; see also Okubora et al., col. 7, l. 67 - col. 8, l. 2. However, Okubora et al. does not teach that double-side printed circuit board 41 has a "porous structure," as required by claim 1. The Examiner referred to column 11, lines 37-40 of Okubora et al. for support of teachings of the "porous structure." Office Action, page 3. However, Applicants note that such portions of Okubora et al. relied upon by the Examiner only teaches a porous sacrificial layer. Okubora et al., col. 11, ll. 37-40. The sacrificial layer does not include wiring conductors and is removed during the bonding process taught in Okubora et al. See Okubora et

al., col. 10, l. 57 - col. 11, l. 7. Therefore, Okubora et al. fails to teach at least “a wiring substrate having an insulating substrate with a porous structure including continuous pores and wiring conductors selectively formed in the porous structure,” as recited in independent claim 1. Independent claim 1 is thus allowable over Okubora et al.

Claims 2-4, 6, 8, and 9 depend from claim 1 and are therefore also allowable over Okubora et al. at least because of their dependence from an allowable base claim.

Applicants also respectfully traverse the claim rejections under 35 U.S.C. § 103(a), because a prima facie case of obviousness has not been established by the Examiner. To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. M.P.E.P. § 2143, 8th ed., Revision of May 2004.

Regarding the rejection of claim 5 under 35 U.S.C. § 103(a) as obvious over Okubora et al. in view of Shibasaki et al., Applicants submit that, as noted above, Okubora et al. fails to teach or suggest each and every element of claim 1, from which claim 5 depends, and that Shibasaki et al. fails to cure the deficiencies of Okubora et al. Particularly, Okubora et al. fails to teach or suggest at least “a wiring substrate having

an insulating substrate with a porous structure including continuous pores and wiring conductors selectively formed in the porous structure," as recited in claim 1.

Shibasaki et al. teaches a compound semiconductor magnetoresistance device including a compound semiconductor thin film 2 formed on an insulating substrate 1. Shibasaki et al., col. 3, ll. 50-57, and Figs. 3A-3B. Shibasaki et al. does not teach or suggest that either insulating substrate 1 or compound semiconductor thin film 2 has a porous structure. Therefore, Shibasaki et al. fails to teach or suggest at least "a wiring substrate having an insulating substrate with a porous structure including continuous pores and wiring conductors selectively formed in the porous structure," as recited in claim 1.

In view of the above, Okubora et al. and Shibasaki et al., taken alone or in combination, fail to teach or suggest each and every element of independent claim 1, from which claim 5 depends. Therefore, claim 5 is patentable over Okubora et al. and Shibasaki et al.

Regarding the rejection of claim 7 under 35 U.S.C. § 103(a) as obvious over Okubora et al. in view of Yasuda et al., Applicants submit that, as noted above, Okubora et al. fails to teach or suggest each and every element of claim 1, from which claim 7 depends, and that Yasuda et al. fails to cure the deficiencies of Okubora et al. As discussed above, Okubora et al. fails to teach or suggest at least "a wiring substrate having an insulating substrate with a porous structure including continuous pores and wiring conductors selectively formed in the porous structure," as recited in claim 1.

Yasuda et al., on the other hand, teaches a method for mounting a semiconductor device on a substrate. For example, as Figs. 1 and 2 of Yasuda et al.

show, “electrodes 4 of semiconductor device 5 and electrodes 7 of substrate 6 are coupled by means of single-layer connection materials 3 and composite connection materials 9. Yasuda et al., page 5, para [0079]. Yasuda et al., however, does not teach or suggest at least “an insulating substrate with a porous structure,” as recited in claim 1.

Therefore, Okubora et al. and Yasuda et al., taken alone or in combination, fail to teach or suggest each and every element of independent claim 1, from which claim 7 depends. Claim 7 is thus patentable over Okubora et al. and Yasuda et al.

Regarding the rejection of claims 10 and 11 under 35 U.S.C. § 103(a) as obvious over Okubora et al. in view of Japp et al., Applicants submit that, as noted above, Okubora et al. fails to teach or suggest each and every element of claim 1, from which claims 10 and 11 depend, and that Japp et al. fails to cure the deficiencies of Okubora et al.

Japp et al. teaches a method of making a printed circuit board (PCB) as laminate chip carriers (LCC). Japp et al., col. 3, ll. 52-61. For example, Fig. 4 of Japp et al. shows a chip 160 connected to a six-layer PCB 120. Japp et al., col. 4, ll. 45-50. Fig. 2 of Japp et al. shows a six-layer PCB 1020 used as an LCC. Japp et al., col. 9, ll. 46-51. Japp et al. does not teach or suggest that either PCB 120, or PCB 1020, or chip 160 comprise a substrate with a porous structure. Therefore, Japp et al. fails to teach or suggest at least “a wiring substrate having an insulating substrate with a porous structure including continuous pores and wiring conductors selectively formed in the porous structure,” as recited in claim 1.

Because Okubora et al. and Japp et al., taken alone or in combination, fail to teach or suggest each and every element of independent claim 1, from which claims 10-11 depend, claims 10 and 11 are patentable over Okubora et al. and Japp et al.

Finally, regarding the rejection of claim 12 under 35 U.S.C. § 103(a) as obvious over Okubora et al. in view of Japp et al. and Hur, Applicants submit that, as discussed above, Okubora et al. and Japp et al., taken alone or in combination, fail to teach or suggest each and every element of claim 1, from which claim 12 depends. Hur fails to cure the deficiencies of Okubora et al. and Japp et al.

Hur discloses a stacked semiconductor package. A first package 40a includes a first chip 11, first leads 13, and first molding compound 19a for sealing the first chip 11 and first leads 13. Hur, col. 4, ll. 1-34. A second package 40b is similarly prepared and stacked on the first package 40a. Hur, col. 4, l. 35 - col. 5, l. 4. Hur does not teach or suggest either first package 40a or second package 40b comprises at least "a wiring substrate having an insulating substrate with a porous structure including continuous pores and wiring conductors selectively formed in the porous structure," as recited in claim 1.

Therefore, Okubora et al., Japp et al., and Hur, taken alone or in combination, fail to teach or suggest at least "a wiring substrate having an insulating substrate with a porous structure including continuous pores and wiring conductors selectively formed in the porous structure," as recited in independent claim 1, from which claim 12 depends. Claim 12 is therefore patentable.


In view of the foregoing remarks, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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